

File Name	MZC-Bitwise Driver	Document Revision	1.3
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Description	MZC-Bitwise Driver		



MZC BitWise Driver v.1.02.17



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MZC BitWise Driver

Revision	Date	By	Changes
1.0	27/01/2012	IP	Original
1.1	09/02/2012	CHP	Added latest screen grabs. Added activation and general content.
1.2	10/02/2012	CHP	Rewrote, added Release Graphics
1.3	17/02/2012	CHP	Added new features & Engineering screen

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Table of Contents

Introduction	4
Equipment Required	4
Software Required	4
Supported Metadata Devices	4
Setting up the Hardware	5
Setting up the Software	5
Screen Tips	16
Connection Indicator & Connection Issues	17
On launch	17
During operation	18
Troubleshooting the connection	18
Deleting Stored Zone & Source Data	19
Activation Key	21
Troubleshooting	22
Known issues	22
Screenshots (iOS)	23
Startup Screens	23
Screen Navigation	23
iPod Metadata device	24
Error Screens	24

Introduction

The iControl Speakercraft (MZC88, MZC66 and MZC64) driver for the BitWise BC4X1 allows seamless control of the MZC range of devices without additional programming by emulating the *MODE Free* keypad. The driver supports the Apple iPad and iPad 2 (iOS5+). Android devices will be supported as soon as the *Bitwise Touch* application is officially released end Q1 2012.

The driver requires no end user engineering. Simply “plug & play”.

The driver communicates with the MZC’s and presents the information in the same manner expected on a mode keypad. This is to provide system familiarity to existing MZC users. The buttons and associated feedback allow full control of the MZC as well as the iPod MODE interface and MZC-88 Internal Tuner.

The driver stores the zone and source data from the MZC after the driver’s first run. This allows a seamless and fast user experience.

Equipment Required

- A programmed MZC system (supports daisy chained Master-slave MZC configurations)
- Speakercraft RSA1.0 (Programmed with the MZC Control Interface Firmware)
- BitWise controls BC4
- A wireless access point
- iPad/iPad2 (iOS5+) (*in future Samsung Galaxy Tab 7 with Android 2.3+*)
- A PC or laptop capable of running *BitWise Controls Project Editor 1.5.10.0* or higher

Software Required

- BitWise Controls Project Editor 1.5.10.0 or higher
- iControl Speakercraft files for the BitWise project editor:
 - *MZC_SCRIPT_DEVICE.bcsp*
 - *GUI_GROUP_MODE_<DEVICE NAME>.grl*
- **Activation Code for BC4 driver from iLED**
- BitWise Controls Touch Application

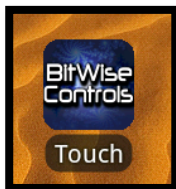


Figure 1. Icon for the BitWise Controls Touch Application.

Supported Metadata Devices

- iPod MODE Base
- MZC-88 Internal Tuner

Support for additional metadata devices may be added in future versions should there be sufficient demand.

Setting up the Hardware

NOTE: For the remainder of this manual the assumption is made that the Speakercraft MZC system has been installed and is fully programmed using *EZTools*.

1. Connect the *RSA1.0* to the *MZC Control Port/Loop* using a standard Ethernet cable. The *RSA1.0* will be powered via Power over Ethernet (PoE) and as such should not require a separate power supply. Ensure that the *RSA1.0* is programmed with the *MZC Control Interface Firmware*. This can be done in *EZ Tools*.

NOTE: You can only have **ONE** *RSA 1.0* programmed with the *MZC Control Interface Firmware* in the MZC's control/expansion loop at a time. Multiple *RSA*'s with the control interface firmware will severely degrade the driver's performance (Use the *Expansion (232) Firmware* for RS232 expansion devices).

2. Connect the Female DB9 side of the serial cable to the *RSA1.0*.
3. Wire the other side of the serial cable to the Phoenix connector on the reverse side of the *BC4* as follows:
 - a. DB9 Pin 5 to **GND**
 - b. DB9 Pin 3 to **RXD**
 - c. DB9 Pin 2 to **TXD**
4. Connect the *BC4* to the wireless access point using a standard Ethernet cable.
5. Connect the **correct** power supply to the *BC4*.

Setting up the Software

NOTE: All of the following steps apply to both the Android and iOS versions of the iControl Speakercraft driver. The screenshots are from both the Android and iOS version, and despite being somewhat different in appearance, they function identically. The type of device used to make the screen grab is given in parenthesis at the end of the caption.

1. Reset the *BC4X1* to factory settings. To do this press and hold the **Reset** button until the following happens:
 - a. The red status LED turns **OFF**
 - b. The red status LED turns **ON**
 - c. The red status LED turns **OFF** and stays OFF.
 - d. Summarized as: LED is on -> Press reset -> LED off -> LED on -> LED off and stays off.
2. Connect the PC and *BC4* to the same network. Preferably use WiFi as this will be the method of communication used by the tablets.
3. Open *BitWise Controls Project Editor*.
4. Open a new project by selecting *File->New Project* or pressing Ctrl+N.
5. Expand the *PROJECT* tree by clicking on the '+' symbol.
6. Right-click on *BC4s* and select *Add BC4 from Network*.

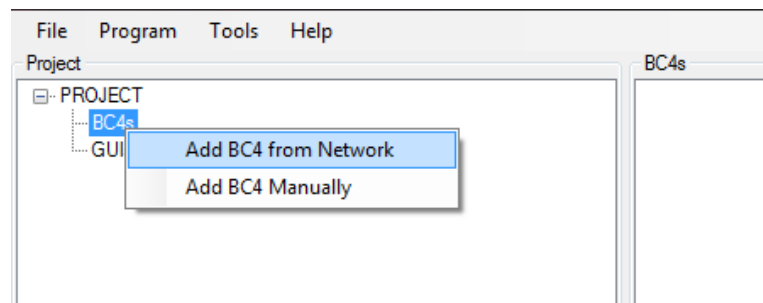


Figure 2. Adding a BC4 to the project

7. The *BC4* should now be shown in the *BC4Discovery* window, assigned an IP address in the DHCP range of the wireless access point.

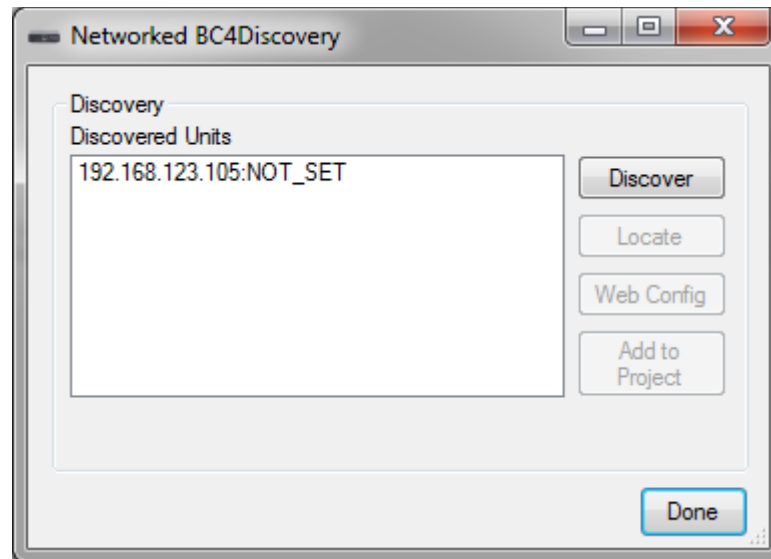


Figure 3. Adding BC4 by network discovery

8. Select the *BC4* and click *Add to Project*.
9. A pop-up message regarding DHCP will come up. Click OK. Then click *Done* on the *BC4Discovery* window.
10. Right-click on the BC4 device named *BC4: NOT_SET* and select *Properties*.

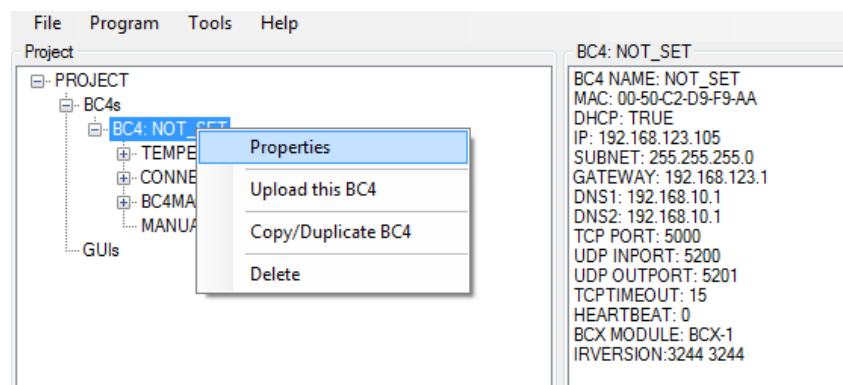


Figure 4. Editing the BC4 Properties

11. Deselect *Use DHCP*, and enter an IP address which is not in the DHCP range of the wireless access point. Also change the name to something relevant.

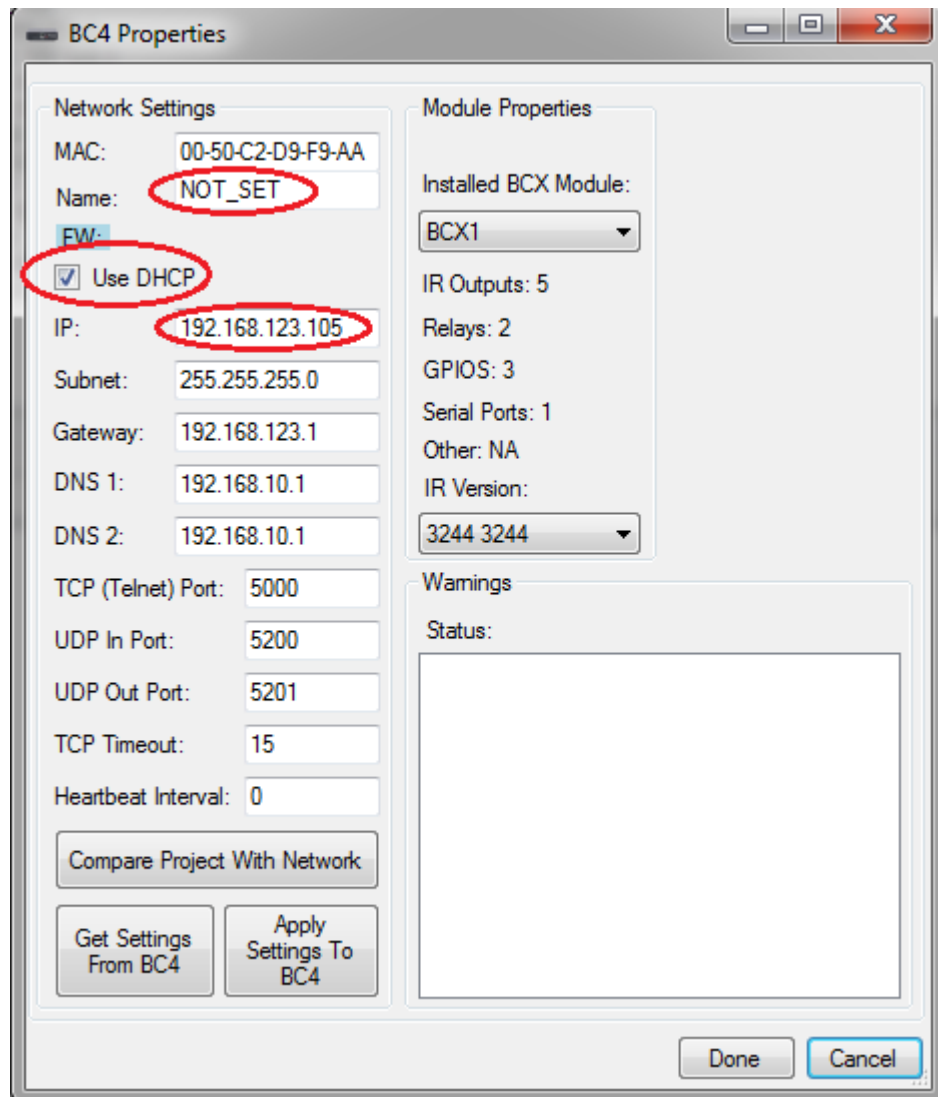


Figure 5. Modifying the relevant BC4 properties

12. Select *Apply Settings To BC4*. This will take several seconds. Once complete select *Done*.
13. Expand the *CONNECTED DEVICES* tree.
14. Right-click on *SERIAL PORT 1* and select *Properties*.

15. On the *SerialPort* configuration screen select *GUI Two-Way (RS232)* and set the *Baud* rate to 57600.

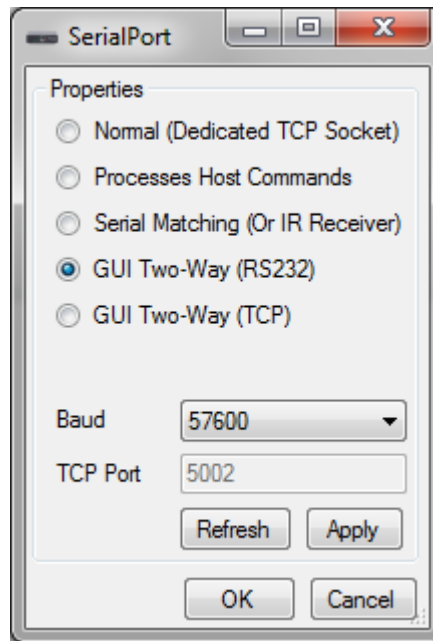


Figure 6. Configuring the Serial Port

16. Right-click on *SCRIPTDEVICES* and select *Import Script Device*.

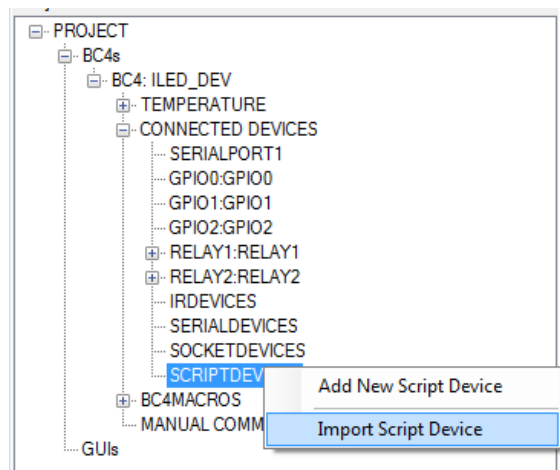


Figure 7. Adding the MZC Interface to the BC4.

17. Import the *MZC_SCRIPT_DEVICE.bcsf* file.
18. Right-click on *GUIs* and select *Import GUI Group*.
19. Import the GUI group for your device of choice by importing the correct *GUI_GROUP_MODE_<YOUR DEVICE TYPE>_<VERSION>.grl* file.

20. Right-click on the *Script* file and select *Edit*.

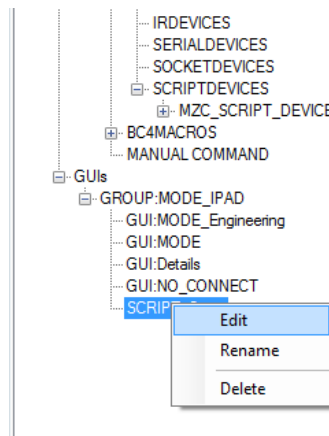


Figure 8. Opening the MODE Configuration File.

21. Complete the relevant fields in the *Script* file.

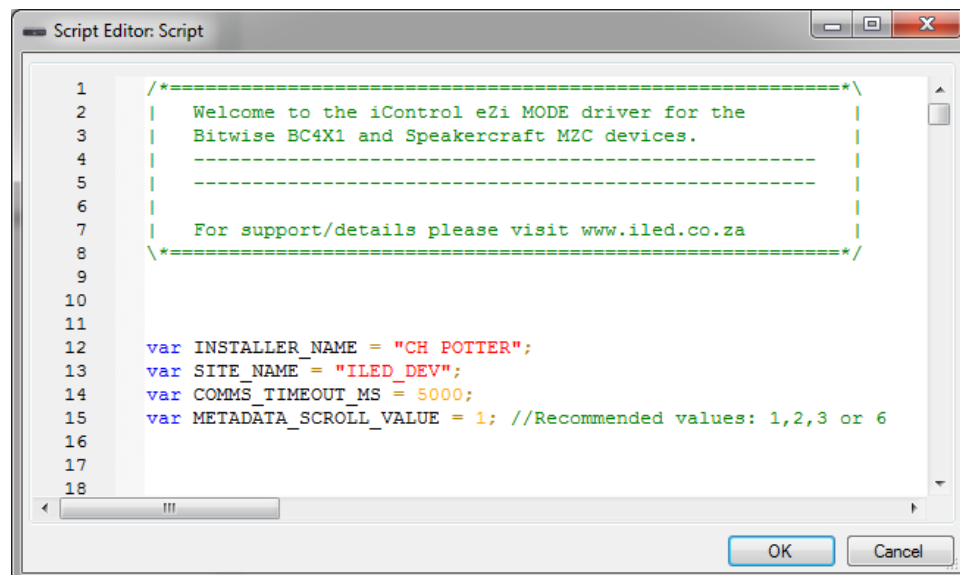


Figure 9. Customizing the MODE script.

22. Select OK.

23. Select *Program* -> *App Options*

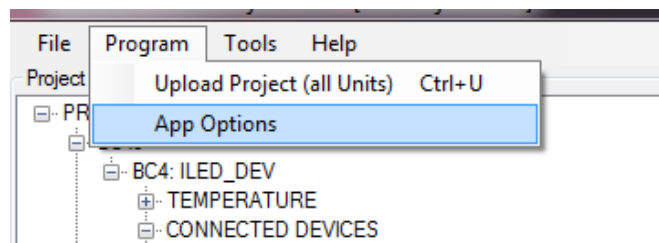


Figure 10. Configuring Application Options.

24. Ensure that *Use UDP Communication* as well as *Compress GUIs* is selected.

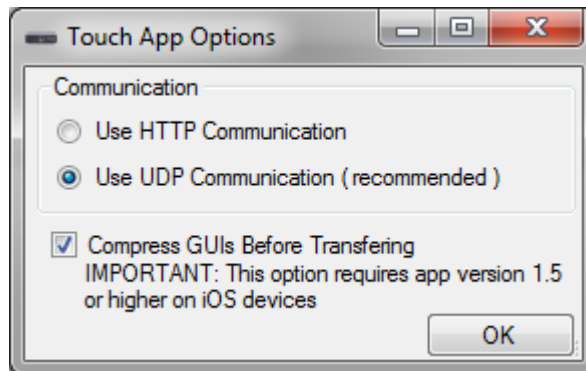


Figure 11. Application Settings.

25. Select *Program* -> *Upload Projects* or press Ctrl+U. Figure 11 will then be shown.

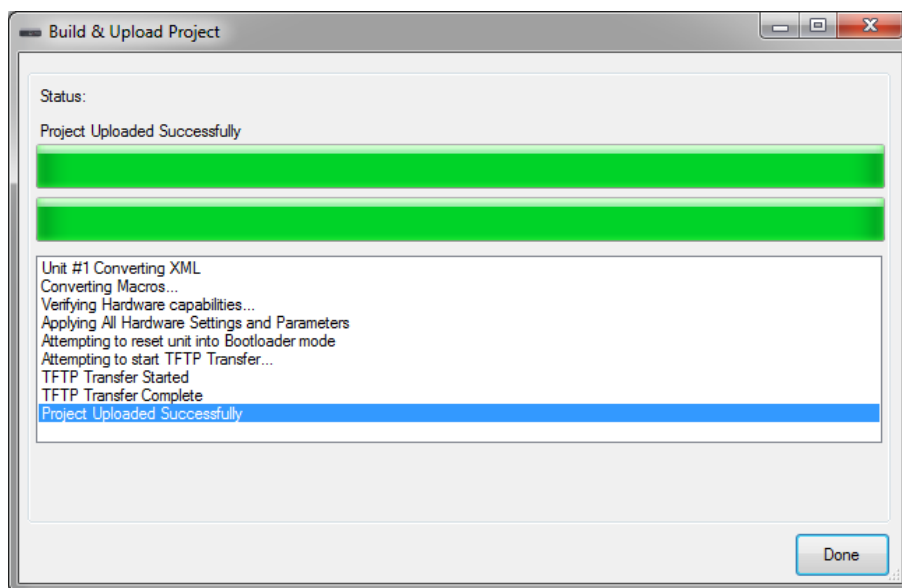


Figure 12. Uploading project to BC4.

26. Select *Done* when upload is complete.

27. Install the *BitWise Touch* application on the control tablet:

- For iOS devices this can be downloaded free from the *App Store*.
- For Android devices – The *BitWise Touch* application should be released by the end of Q1 2012 to the Android store.

28. Ensure that the tablet is connected to the same network as the PC and BC4.

29. Right-click on *GROUP: MODE_<your device type>* and select *Upload Group to BitWise Touch App*.

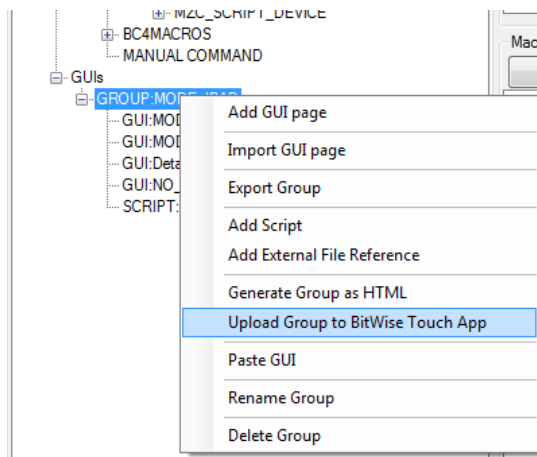


Figure 13. Starting the mobile application upload.

30. The *Upload Beacon* should then be started.

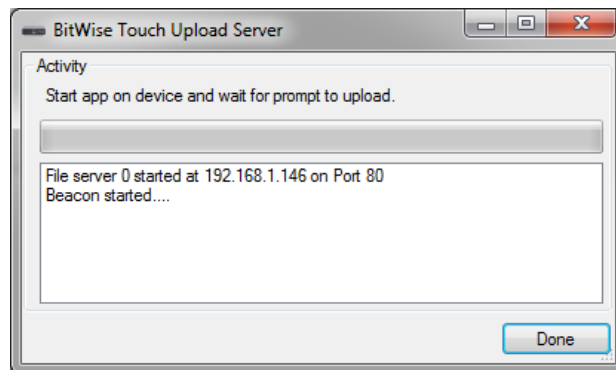


Figure 14. Upload beacon waiting for connection.

31. Open the *BitWise Touch* application on the tablet. You should be presented with the following screen on the tablet:

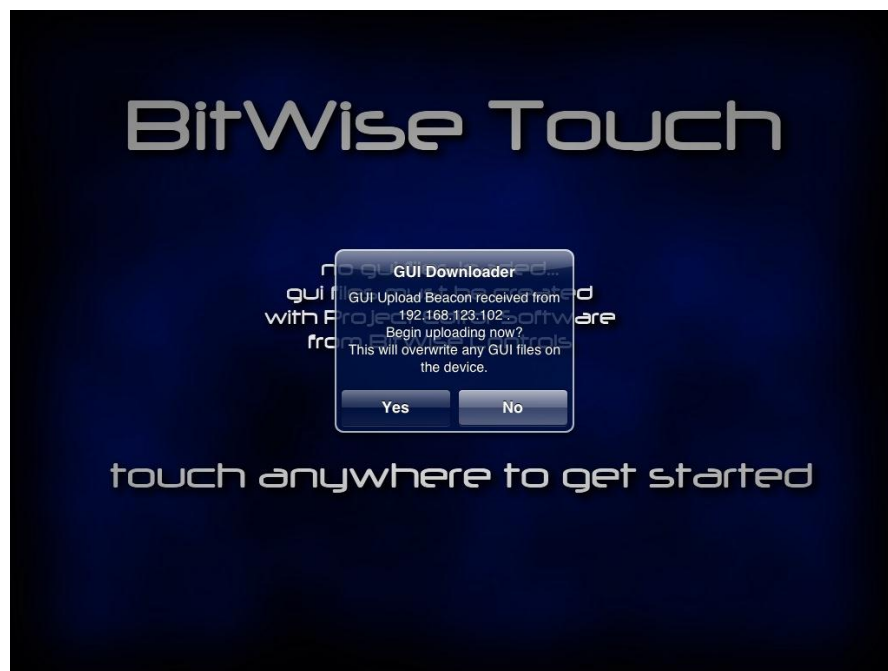


Figure 15. GUI Downloader on tablet (iPad).

32. Select **Yes**. The file transfer will then begin with progress being shown on both the tablet and PC.

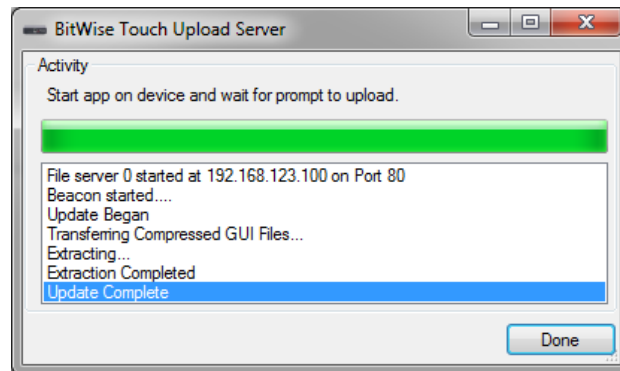


Figure 16. Upload completed on PC.

33. The tablet will now show a screen asking which GUI to use as the start-up page. Select **MODE 1.htm**.

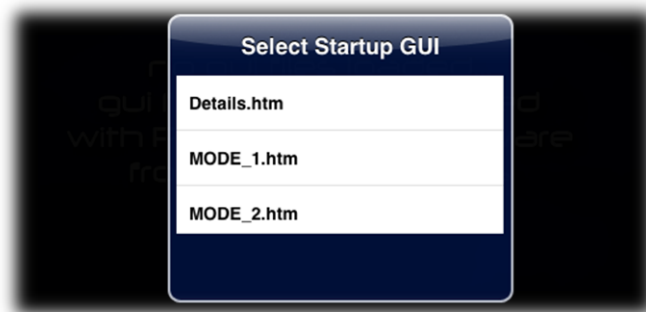



Figure 17. GUI selection screen on tablet (iPad).

34. Close the *Upload Beacon* on the PC by clicking **Done**.

35. Close the *BitWise Touch* application on the tablet by:

- iOS: Pressing the **HOME** button.
- Android: Pressing the  button.

36. Re-open the *Touch* application. A pop-up message will then alert you to the fact that this tablet is not registered to control the BC4. Select **OK**.

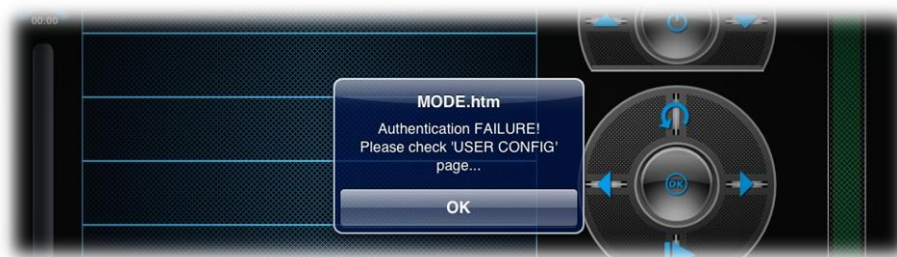


Figure 18. BC4 Registration Pop-up message (iPad).

37. The application will then navigate to the following screen:

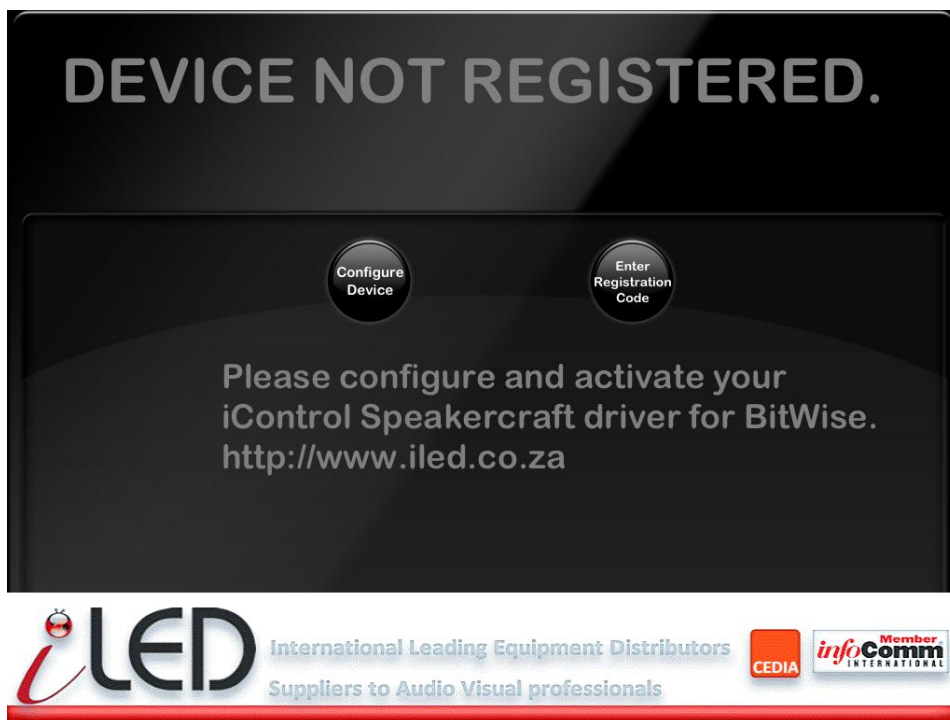


Figure 19. Registration screen.

38. Configure the MODE by setting the total amount of Zones in the system. Click *Configure Device*.



Figure 20. Zone Number Configuration.

39. Enter the amount of zones in your system. If this is 2x MZC-66's then enter 12 even if all the zones are not used.

40. Click *Enter Reg. Code*.



Figure 21. Entering Activation Code.

41. Enter the activation code for your BC4 supplied by iLED. Click OK.

42. For iOS:

- a. Close *Bitwise Touch Application*.
- b. Open iOS settings application.
- c. Scroll to the *Touch* app settings (using the left side of the screen).
- d. Change the **Local Startup GUI** to either (case sensitive):

- i. **MODE_1.htm**
- ii. **MODE_2.htm**
- iii. **MODE_3.htm**
- iv. **MODE_4.htm**

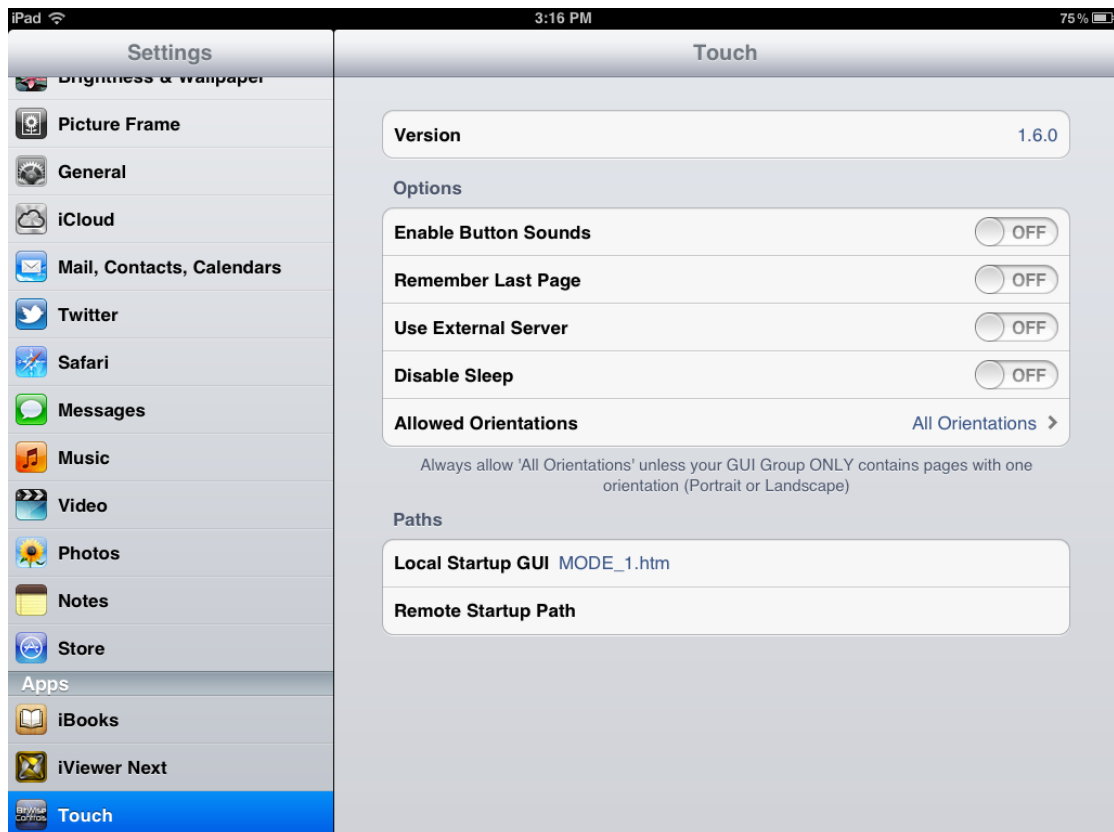


Figure 22. Changing the GUI

1. For the Android devices:

- a. In the *BitWise Touch* application press the menu button.

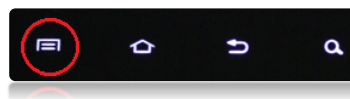


Figure 23. Menu Button for Android

- b. Select *Local Startup GUI*
- c. Select **MODE_Engineering.htm**.

43. Re-open the *Bitwise Touch Application*

44. If the activation code was entered correctly then the application will begin downloading the information for your system from the MZC. If the code was incorrect then return to step 36.

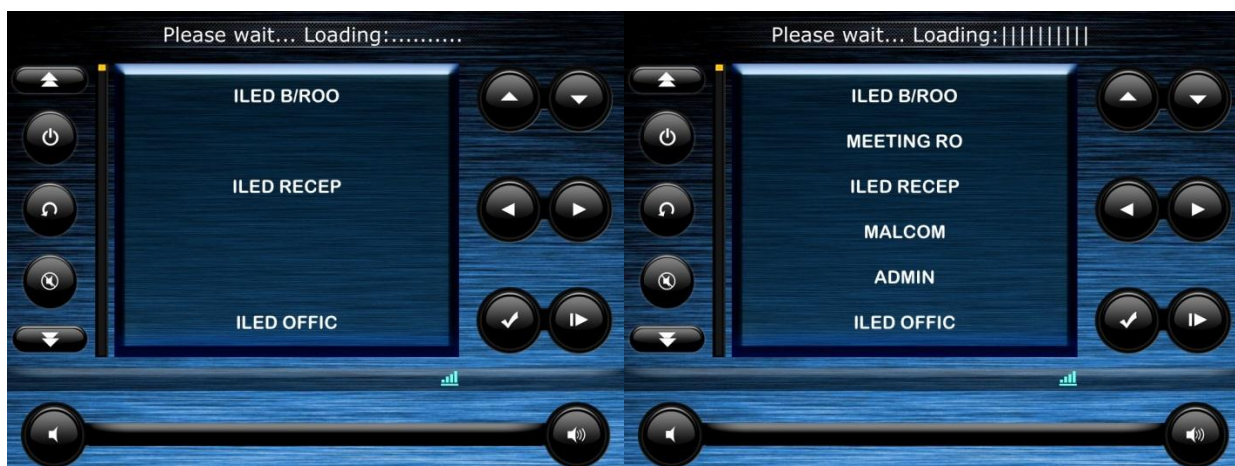


Figure 24. Downloading the data from the MZC. (iPad)

45. The first-run download process can take several minutes depending on your system. Once complete you will be presented with the following screen:



Figure 25. Zone selection screen.

IMPORTANT!!

Should you reprogram the MZC with different zone and source information after the “first run” download completes then you will need to clear the stored MZC data in the application.

See the *Deleting Stored Zone & Source Data* section of the user manual.

Screen Tips

The function of each button on the screen is described below.

All of the *MODE* keys respect the programming assigned to them in the *Speakerscraft EZ Tools* program.



Connection Indicator & Connection Issues

The iControl Speakercraft driver provides feedback to the user on the current state of communications between the tablet and MZC. This differs based on the state of the driver. See below.

On launch

When the driver is launched it attempts to connect to the MZC. Should no response be received from the MZC/BC4 the application will navigate to the error screen shown below.

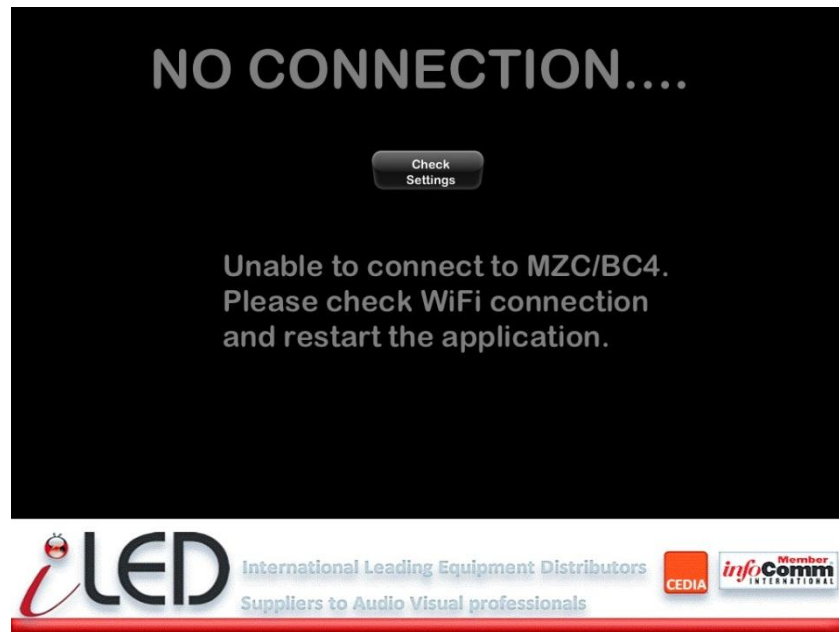


Figure 26. On Start connectivity issue screen.

The error screen allows the user to view the network details of the BC4 to which the GUI is attempting to connect. This information can then be used to troubleshoot network connectivity/settings issues.

During operation

During normal operation a network activity indicator shows the presence of normal data traffic from the MZC. Should the application not receive data for more than **5 seconds** the network activity indicator will turn **RED**. This implies one or more of the following:

- The MZC is too busy to respond.
- Connection to the WiFi network has been lost
- The tablet connected to another network
- Something has gone wrong with the communications on the tablet

The indicator will return to its normal color upon receiving data from the MZC.



Figure 27. Communications status indicators.

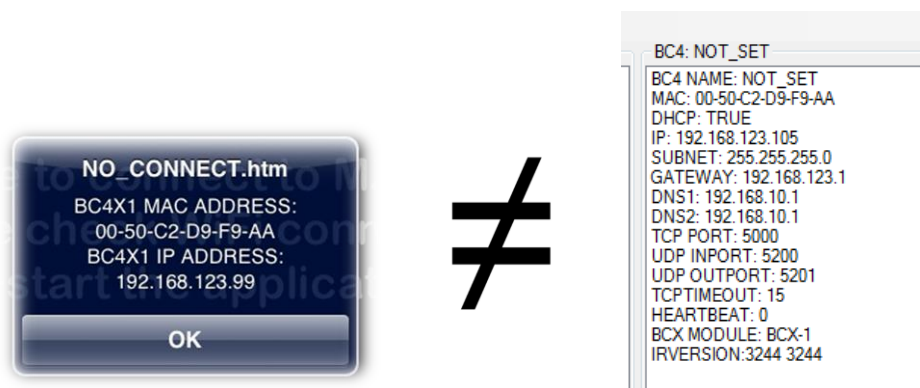


Figure 28. This could be the reason your driver does not connect to the BC4.

Troubleshooting the connection

In the event that the application cannot communicate to the MZC try one or more of the following:

- Restart the application.
- Reset the WiFi connection on the tablet & ensure it connects to the correct network.
- Reset the wireless access point.
- Reset the BC4 & MZC.
- Ensure that the network settings (IP address & subnet mask) in the *Project Editor* project used to upload the driver match those of the BC4.

The Engineering Screen

The iControl Speakercraft driver provides a set of tools which can be used for troubleshooting and configuration.

The engineering screen gives limited controls, however provides a large amount of feedback which can be helpful in troubleshooting an installation.

Features accessible through engineering screen:

- Display a list showing each source's type (as acquired from the MZC)
- Rename any Zone on the tablet (locally).
- Rename any Source on the tablet (locally).
- **Note:** If the MZC sends source name updates (such as in iPod MODE bases & MZC-88 Internal Tuners) these will be displayed in lieu of the saved source name.
- Clear the locally cached data so that a new MZC system can be learned.
- Perform a communications reliability test.
- View the data from the MZC as it is cached into the application on first-run loading.

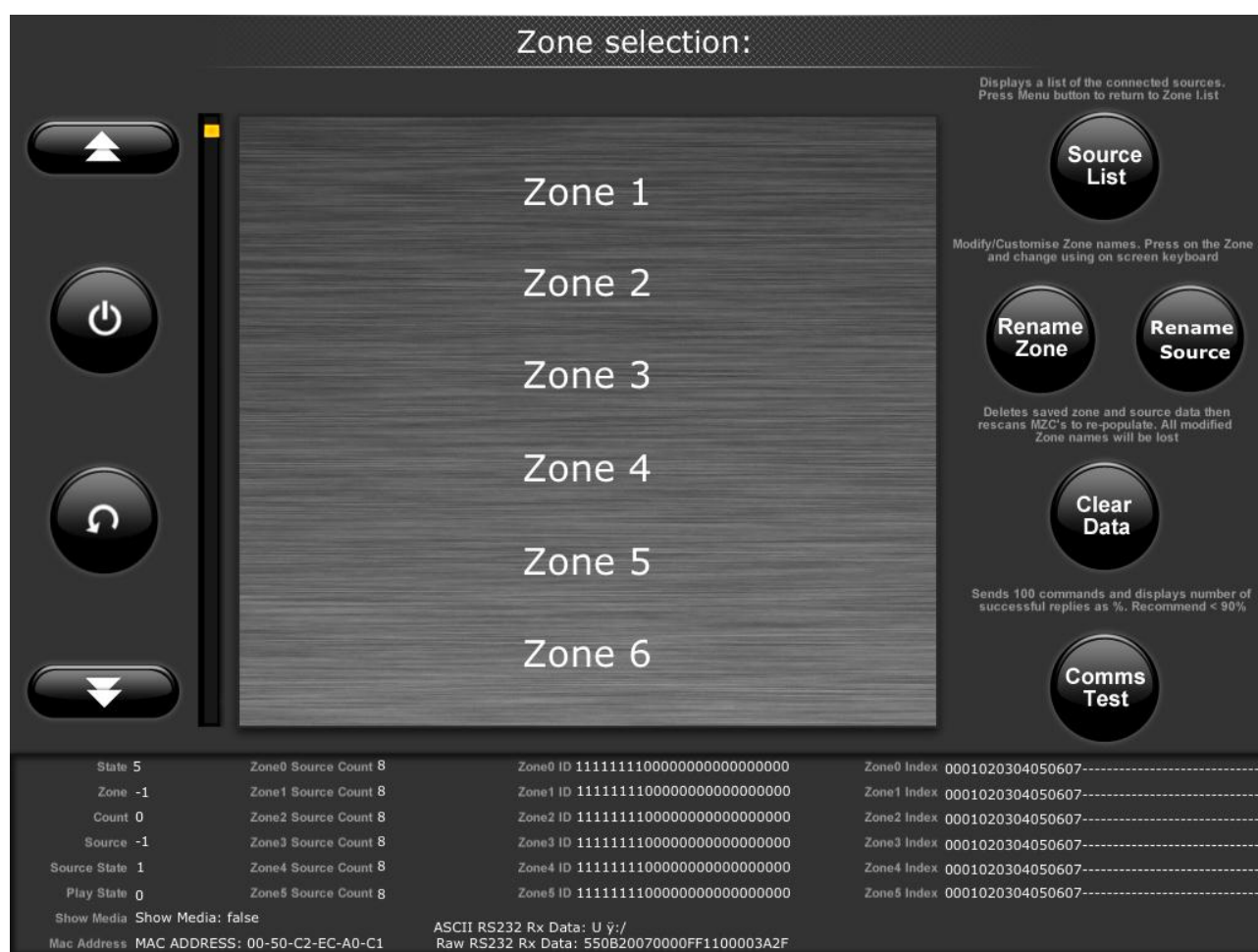


Figure 29. The Engineering Screen

Navigating to the Engineering Screen

1. For the iOS devices:
 - a. Open the iOS settings app.
 - b. Scroll to the *Touch* app settings (using the left side of the screen).
 - c. Change the **Local Startup GUI** to **MODE_Engineering.htm** (case sensitive).
 - d. Open the *BitWise Touch* application.

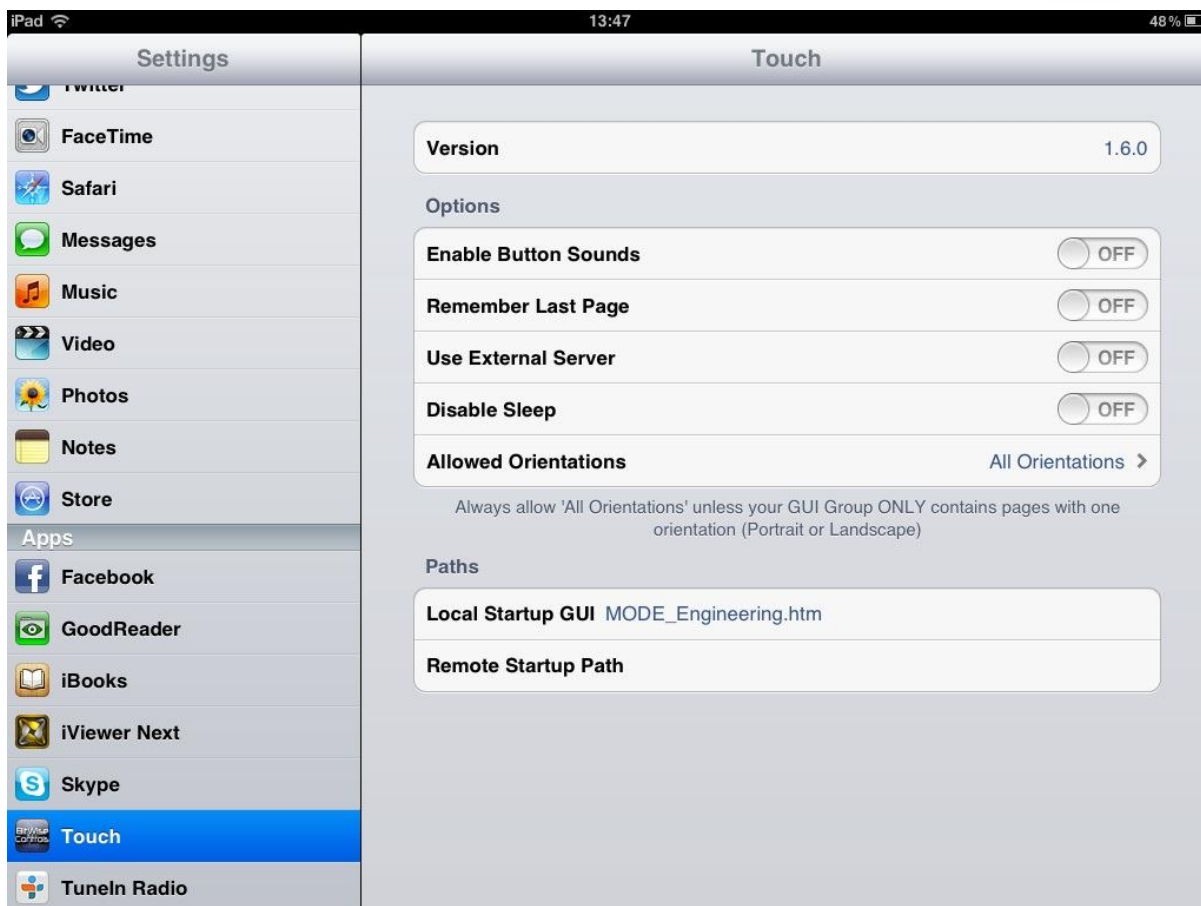


Figure 30. How to set the application to navigate to the Engineering screen.

2. For the Android devices:
 - i. In the *BitWise Touch* application press the menu button.

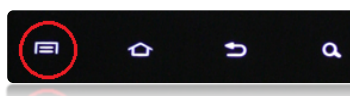


Figure 31. Menu Button for Android

- ii. Select *Local Startup GUI*
- iii. Select **MODE_Engineering.htm**.

Renaming Zones & Sources

Zones and sources can be renamed on the Engineering screen via the relevant buttons. Select the relevant button and follow the prompts to modify the locally cached data for the *MZC EZ Tools* program. Note that this will only change the information for the tablet on which the change was done. The changes will also be lost should the user clear the cached data.

Also, metadata sources such as the iPod MODE base & *MZC-88 Internal Tuner* constantly send out name updates. These will override the cached name for those sources.



Deleting Stored Zone & Source Data

When the driver launches for the first time it caches the zone and source information from the MZC. This can take several minutes. This information is then stored locally to ensure a fast and slick user experience.

However, should the MZC be reprogrammed with a new/modified project then the stored zone and source data will not reflect what is actually happening on the MZC.

To prevent this, the installer/integrator is required to delete the locally saved data on the tablet whenever reprogramming the MZC.

- On the Engineering screen press the *Clear Data* button.
- Using the methods described above change the startup GUI back to **MODE.htm**
- The application will now be reset to factory/default settings. You will need to configure and activate as described in step 37+ of *Setting up the Software*.



Performing the Communications Reliability Test

The user can perform a communications reliability test to gauge the quality of the data communications:

- From the GUI to the BC4
- From the GUI to the MZC



Performance from the GUI to MZC

This test is used to gauge the reliability of the communication between the GUI and the MZC.

- Press the *Comms Test* button
- Wait for the communications test to complete (progress is indicated in the status bar at the top of the GUI)
- Upon completion the results will be presented. Anything below 80% is undesirable and may lead to unreliable performance of the iControl Speakercraft driver.

Performance from the GUI to BC4

For this test the BC4 is disconnected from the MZC. As such the communications test results will indicate 0% reliability on completion; however the user will be able to check the performance manually on a PC.

- Connect a USB to RS232 converter to your PC.
- Open a serial terminal program such as RealTerm, HyperTerminal etc.
- Open the serial port with the following settings:
 - 57600 Baud
 - 8 data bits
 - 1 stop bit
 - No parity
- Connect the USB to RS232 converter's DB9 (male) to the female DB9 attached to the BC4 in the hardware setup procedure.
- Press the *Comms Test* button.
- When prompted for the communications interval; select the default of 500ms. This is the communications interval for the main driver.
- The communications test will then be performed. For each percent of the communications test you should receive the following **HEXADECIMAL** data in your serial terminal on the PC: **\$55 \$03 \$41 \$67** (If your terminal is parsing the data as **ASCII** you will see **U?Ag**)

Activation Key

In order to use your iControl Speakercraft driver a 14-character activation key is required. Non South African customers may purchase an activation key at <http://www.iled.co.za/pEZI-MZC-BW-MODE-APPLE/eZi-MZC-BW-Mode-Apple.aspx>

For now the online transaction process is not automated. As such your activation key (as well as the required .grl and .bcsp files) will be emailed to you within 12 hours of your purchase.

The licensing scheme is per BC4. This means that you can activate multiple tablets (and later phones) to operate the *iControl Speakercraft Driver*. Should you have any queries contact info@iled.co.za

Troubleshooting

Should any issues arise in the use of the driver try one of the following:

- Restart the application.
- Reset the WiFi connection on the tablet & ensure it connects to the correct network.
- Reset the wireless access point.
- Reset the BC4 & MZC.
- Ensure that the network settings (IP address & subnet mask) in the *Project Editor* project used to upload the driver match those of the BC4.
- Perform the communications test on the Engineering screen.

Known issues

None.

Should you or any user find a bug/issue with the driver please send an email describing the issue to: engineering@iled.co.za where it will be resolved ASAP.

Style Templates

The iControl Speakercraft driver comes with 4 GUI templates as seen below.

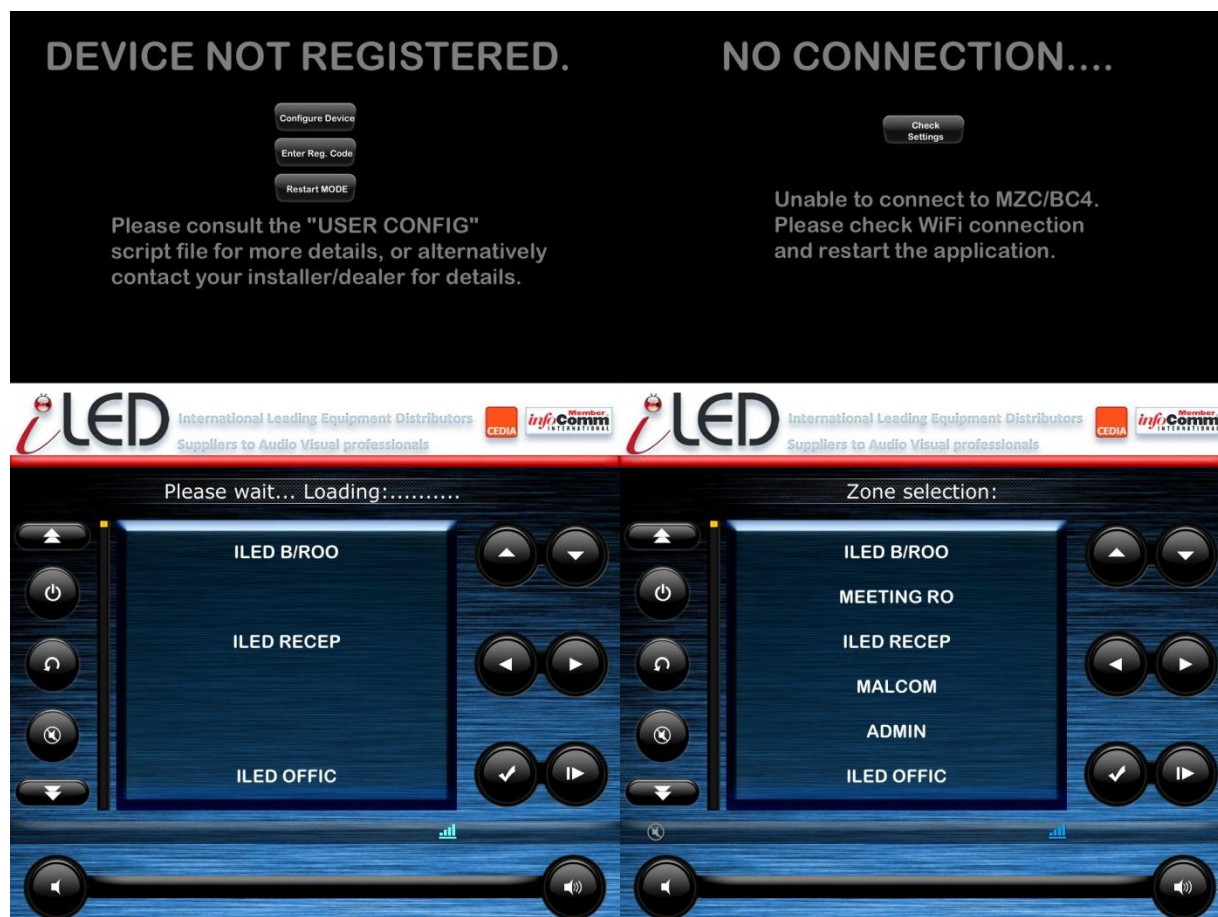


Advanced Users: The images for the buttons, labels etc. can be edited in the Bitwise Controls Project Editor. Do not however change button/label numbers as the JavaScript engine uses the object names for reference.

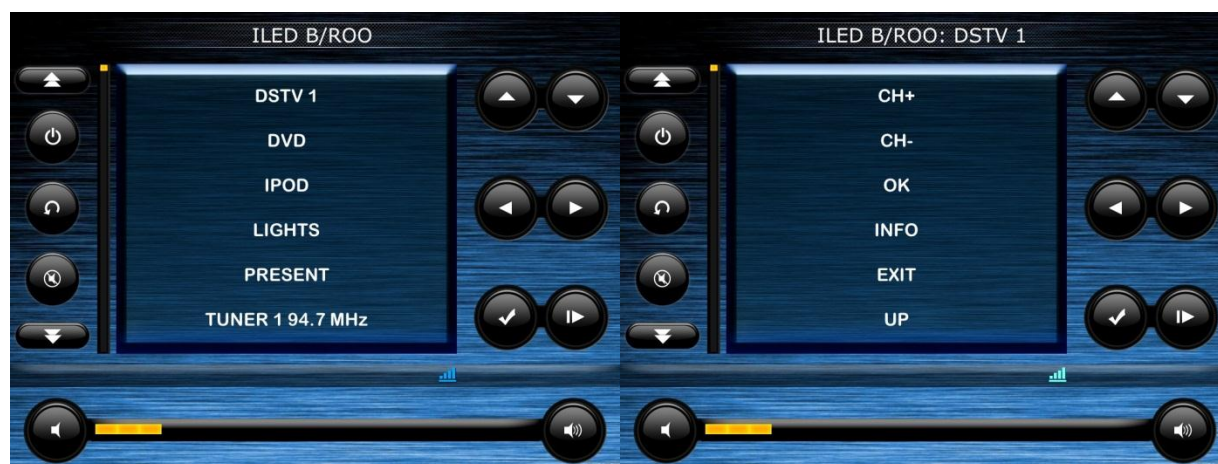
Screenshots (iOS)

These screenshots show the progression from the initialization screen (only shown once when the app is opened to the top zone menu through to an ipod in the first zone

Startup Screens



Screen Navigation



iPod Metadata device



Error Screens

